Rigorously Assessing Whether the Data Backs the Back School

David T. Vinh, B.S., P.T.A., Craig W. Johnson, PhD, Cynthia L. Phelps, PhD
School of Health Information Sciences, University of Texas Health Science Center at Houston

ABSTRACT

A rigorous between-subjects methodology employing independent random samples and having broad clinical applicability was designed and implemented to evaluate the effectiveness of back safety and patient transfer training interventions for both hospital nurses and nursing assistants. Effects upon self-efficacy, cognitive, and affective measures are assessed for each of three back safety procedures. The design solves the problem of obtaining randomly assigned independent controls where all experimental subjects must participate in the training interventions.

BACKGROUND

More than 1/3 of back injuries among nurses occur with patient transfers[1]. Nurses have attributed more than half of their injuries to inadequate training and staffing[2]. If nurse's self-efficacy[3] and knowledge concerning safer transfer skills can be improved, injuries would be expected to decrease. Bandura has argued that self-efficacy mediates effective behavior change by affecting the likelihood that a person will attempt a behavior[3]. The present study, employing randomized controlled comparisons in a hospital setting, rigorously documents the degree to which back "skills training", and "didactic training", significantly improve nurses' and nursing assistants' self-efficacy, affect, and cognitive knowledge concerning back safety and patient transfer skills.

METHODOLOGY

In this recently begun year-long study, an elaboration of the randomized "Quasi-Experimental Alternative to the One-Group Pretest-Posttest Design[4]", which in the present case includes controls for nearly all threats to internal and external validity, is employed. Each month at the beginning of training, from 10 to 30 nurses and nursing assistants are randomly assigned within blocks to be tested on one of four independent testing occasions (beginning of the day, pre "didactic", post "didactic"/pre "skills", post training) relative to their back safety and transfer skills training session(s). Consequently, each trainee is tested on the Back Safety and Transfer Training Questionnaire (BSTTQ) on only <u>one</u> of the four occasions. The four resulting groups constitute a four level one factor (Testing Occasion) completely randomized design. Training for nurses differs from that for nursing assistants. Nursing assistants receive first "didactic" and then "skills" training. Nurses receive only "didactic" training. The BSTTQ assesses, on separate subscales, self-efficacy, affective, and cognitive learning attributes for each transfer skill. A three factor (Nurses vs. Nursing Assistants, Month of Training, Testing Occasion,) between-subjects MANOVA tests for significant impacts of each factor on BSTTQ subscale means.

INSTRUMENT

The Back Safety and Transfer Training Questionnaire (BSTTQ) includes items that assess self-efficacy and affective objectives in addition to objective multiple-choice items assessing cognitive learning. First, test respondents rate their back safety procedure self-efficacy for each of three transfer skills ("Moving or scooting a patient up in bed"; "Transferring a patient to a chair"; "Transferring a patient to a stretcher"). For each transfer skill self-efficacy is rated using a 10 point scale with "1" representing that a participant "cannot do" a skill and "10" representing that a participant "can do" a skill. Next, respondents check in a table listing 10 obstacles the three main obstacles to effective performance for each of the three transfer skills. Finally, cognitive learning is measured objectively for each back skill using 12 multiple–choice questions. Questions are grouped for each skill (subscale) and subscale and overall composite scores are compiled by summing correct responses for each subscale and all items, respectively. Cronbach's coefficient alpha assesses reliability.

DISCUSSION

This study develops and implements a randomized quasi-experimental design having broad applicability in clinical settings to rigorously document the effectiveness of a back safety and patient transfer training program. The design includes controls for nearly all factors potentially jeopardizing internal or external validity while assessing effects of both "didactic" and "skills" training upon nurses' and nursing assistants' back safety skill self-efficacy, affect, and knowledge. Results may help identify training strategies that could potentially lead to the reduction of healthcare worker back injuries.

REFERENCES

1. Smedley J., Egger P., Cooper C. & Coggon D. Manual handling activities and risk of low back pain in nurses. Occupational and Environmental Medicine 1995; 52: 160-163.
2. Yassi A. The epidemiology of back injuries in nurses at a large Canadian tertiary care hospital: implications for prevention. Occupational Medicine (Lond.) 1995; Aug 45: 215-220.
3. Bandura A. Self-efficacy: The exercise of control. New York: W. H. Freeman Company; 1997.
4. Johnson CW. A More Rigorous Quasi-Experimental Alternative To The One-Group Pretest-Posttest Design. Ed. & Psyc. Meas. 1986: 585-589.